Clean Harbors®
ENVIRONMENTAL SERVICES, INC.
1200 CROWN COLONY DRIVE, P.O. BOX 9137 • QUINCY, MA 02269-9137
(617) 849-1800

Via Federal Express

October 3, 1994

Mr. James Moore
Illinois Environmental Protection Agency
Division of Land Pollution Control -- #24
Permit Section
2200 Churchill Road
Post Office Box 19276
Springfield, IL 62794-9276

Re: Clean Harbors of Chicago, Inc.
Log No. B-16-M-2
Dioxin/Furan/Pesticide Analytical Data (Partial)

Dear Mr. Moore:

Per your request, enclosed please find analytical data sheets for dioxins/furans/organophosphate pesticides soil testing conducted as part of the preconstruction boring program undertaken by Clean Harbors of Chicago, Inc. at the CWM Chemical Services, Inc. hazardous waste facility in Chicago, IL. The results are in five (5) sets. I have also enclosed for your review a summary which presents the data in tabular form.

As we discussed, the results showed no detectable concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD), the most toxic of the dioxin congeners. Moreover, while the total dioxin concentrations range from "not detected" up to a value of 19 parts per billion, an analysis of the data using USEPA screening methods and toxicity equivalence factors (TEF's) shows the total dioxin concentration in each boring to be well below 1 part per billion. I have included a copy of the analysis for your information, along with an excerpt from USEPA's recent dioxin risk assessment guidance document which discusses the TEF protocol.

Finally, please note that the analytical data, summary table, and TEF calculations submitted today represent information that was available as of 9-30-94. Additional laboratory results are expected within the next few days and will be submitted to the Agency. At that time, an updated summary table and TEF evaluation will also be submitted.

If you have any questions, please do not hesitate to contact me at (617) 849-1800, extension 4473.

Sincerely,

Paul A. Ahearn

Paul A. Ahearn
Manager, Regulatory Compliance

cc: Stephen Pozner, V.P., Compliance and Health & Safety, CHESI

Enclosures

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

59 #9
60 #2-9
61 #5-6
62 #7

September 30, 1994
QUANTERRA INCORPORATED PROJECT NUMBER: 077587
PO/CONTRACT: 38823

Jay Cudmore
Clean Harbors Analytical Services, Inc.
325 Wood Road
Braintree, MA 02184

Dear Mr. Cudmore:

This report contains the analytical results for the fourteen soil and two aqueous samples which were received under chain of custody by Quanterra Incorporated on 9 September 1994. These samples are associated with your Project No. 25713-009.

The case narrative is an integral part of this report.

If you have any questions, please call me at (916) 374-4433.

Sincerely,

Emily Chelhow

for

Robert Hrabak
Project Manager
Low Resolution Dioxin Services

ks

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 077587

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 077587

General Comments: Appendix IX Dioxins/Furans

Please note all soil samples were originally extracted 19 September 1994 at 10.0 g. Because of low internal standard recoveries all sample were re-extracted on 27 September 1994 at 10.0 g. Samples "59B-9 1'-3'", "60B-6 1'-3'", "60B-8 1'-3'" "60B-9 1'-3'", "61B-6 1-3'", "60B-5 3'-5'", "60B-4 5'-7'", 60B-2 3'-5'" and "60B-6 3'-5'" were extracted at a third time on 29 September 1994 at 1.0 g because low internal standard recoveries were observed again in the 10.0 g re-extractions.

Some internal standards have recoveries less than 40%. The chromatographic signal to noise ratio is greater than 10-to-1. This is one of the criteria used to judge acceptance.

General Comments: 8140 - Soil

Please note that some surrogate recoveries are qualified with a "J" flag. These samples had matrix interferences which caused dilutions to be performed. Because of the necessary dilutions, the surrogate recovery fell below the range of the calibration curve thus necessitating qualification.

Anomaly: 8140 - Aqueous

Please note samples "FB-2" and "FB-4" were extracted one day outside of the recommended seven day holding time.

QUANTERRA INCORPORATED QUALITY ASSURANCE PROGRAM

Quanterra Incorporated has implemented an extensive Quality Assurance (QA) program to ensure the production of scientifically sound, legally defensible data of known documental quality. A key element of this program is Quanterra's Laboratory Control Sample (LCS) system. Controlling lab operations with LCS (as opposed to matrix spike/matrix spike duplicate samples), allows the lab to differentiate between bias as a result of procedural errors versus bias due to matrix effects. The analyst can then identify and implement the appropriate corrective actions at the bench level, without waiting for extensive senior level review or costly and time-consuming sample re-analyses. The LCS program also provides our client with information to assess batch, and overall laboratory performance.

Laboratory Control Samples - (LCS)

Laboratory Control Samples (LCS) are well-characterized, laboratory generated samples used to monitor the laboratory's day-to-day performance of routine analytical methods. The results of the LCS are compared to well-defined laboratory acceptance criteria to determine whether the laboratory system is "in control". Three types of LCS are routinely analyzed: Duplicate Control Samples (DCS), Single Control Samples (SCS), and method blanks. Each of these LCS are described below.

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand, sodium sulfate or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS.

Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

SAMPLE DESCRIPTION INFORMATION
for
Clean Harbors Analytical Services, Inc.

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
077587-0001-MB	Method Blank	SOIL			09 SEP 94
077587-0001-SA	59B-9 1'-3'	SOIL	07 SEP 94	14:20	09 SEP 94
077587-0002-SA	60B-6 1'-3'	SOIL	07 SEP 94	14:40	09 SEP 94
077587-0003-SA	60B-7 1'-3'	SOIL	07 SEP 94	15:00	09 SEP 94
077587-0003-MB	Method Blank	SOIL			09 SEP 94
077587-0004-SA	60B-8 1'-3'	SOIL	07 SEP 94	15:20	09 SEP 94
077587-0005-SA	60B-9 1'-3'	SOIL	07 SEP 94	15:40	09 SEP 94
077587-0006-SA	61B-5 1'-3'	SOIL	07 SEP 94	16:20	09 SEP 94
077587-0007-SA	61B-6 1'-3'	SOIL	07 SEP 94	16:40	09 SEP 94
077587-0008-SA	62B-7 1'-3'	SOIL	07 SEP 94	16:00	09 SEP 94
077587-0009-SA	60B-5 3'-5'	SOIL	07 SEP 94	08:35	09 SEP 94
077587-0010-SA	60B-4 5'-7'	SOIL	07 SEP 94	10:15	09 SEP 94
077587-0011-SA	60B-3 3'-5'	SOIL	07 SEP 94	10:50	09 SEP 94
077587-0012-SA	60B-2 3'-5'	SOIL	07 SEP 94	12:00	09 SEP 94
077587-0013-SA	60B-6 3'-5'	SOIL	07 SEP 94	12:30	09 SEP 94
077587-0014-SA	60B-3(dup) 3'-5'	SOIL	07 SEP 94	10:50	09 SEP 94
077587-0015-MB	Method Blank	AQUEOUS			09 SEP 94
077587-0015-SA	FB-2	AQUEOUS	07 SEP 94	16:45	09 SEP 94
077587-0016-SA	FB-4	AQUEOUS	07 SEP 94	11:15	09 SEP 94

Clean Harbors®
ENVIRONMENTAL SERVICES, INC.
11800 South Stony Island Avenue • Chicago, IL 60617
(312) 646-6202 • FAX (312) 646-6381

Certified Mail #P350678770

October 3, 1995

Illinois Environmental Protection Agency
Bureau of Land
Planning and Reporting Section
2200 Churchill Road
Post Office Box 19276
Springfield, IL 62794-9276

Dear Sir:

Enclosed is documentation submitted as a requirement of the Clean Harbors of Chicago, Inc. RCRA Part B Permit (RCRA Log No. 16-M-2, 0316000051). This is required by a Groundwater Monitoring Special Condition, Section III, Part C, Number 1 on pages III-2 and III-3.

The Special Condition requires Clean Harbors of Chicago, Inc. to submit corrections or additions to the Well Location and Construction Table. The corrected table is as follows:

Upgradient Wells

Facility Well No.	Well Depth (ft BGS)	Well Depth Elevation (ft MSL)	Well Screen Interval (ft MSL)
G123S	18.37	573.35	573.35-578.35
G307S	13.34	575.70	575.70-585.70
G334S	12.79	577.86	577.86-587.86
G343S	12.91	577.60	577.60-587.60

Compliance Point Wells

Facility Well No.	Well Depth (ft BGS)	Well Depth Elevation (ft MSL)	Well Screen Interval (ft MSL)
G120S	20.01	573.05	573.05-578.05
G121SR	24.98	571.41	571.41-576.41
G122S	19.71	573.54	573.54-578.54
G124S	19.29	572.56	572.56-577.56
G126S	15.92	576.20	576.20-581.20

Note: G121SR is a replacement well for G121S.

Clean Harbors of Chicago, Inc. is also submitting additional documentation concerning agreements and arrangements made with emergency response agencies. Attachment D, Section F, Number 4 required documentation be made to the Agency concerning agreements and arrangements with emergency response agencies. The original documentation was submitted January 3, 1994.

If you have any further questions, please contact me at (312)646-6202.

Sincerely,

James R. Laubsted
Facility Compliance Manager

ENSECO
A Corning Company

☒ 2544 Industrial Ave., West Sacramento, CA. 95691-3435 (916) 372-1393
☐ 7440 Lincoln Way, Garden Grove, CA. 92641-1432 (714) 898-6370
☐ 16501 East Gale Ave., City of Industry, CA. 91748-1321 (818) 965-1006
☐ Mobile Labs, 1 (800) ENSECO-8

DATE 9/7/94
LAB NUMBER
CHAIN OF CUSTODY NUMBER 14239
Page 1 of 2

CLIENT: Dames + Moore
ADDRESS: 2701 International Lane
CITY: Madison | STATE: WI | ZIP CODE: 53704
PROJECT NAME: 25713-009
CONTRACT/PURCHASE ORDER/QUOTE NO.

PROJECT MANAGER: David Trainor
TELEPHONE NUMBER (AREA CODE): (608) 244-1788
SITE CONTACT: David Trainor
TELEPHONE NUMBER (AREA CODE): (608) 244-1788

ANALYSES: DIOXIN; 8140's

SAMPLE NO./IDENTIFICATION	DATE	TIME	LAB/SAMPLE NUMBER	SAMPLE TYPE: LIQ.	AIR	SOLID	NO. OF CONTAINERS	DIOXIN	8140's	Sample Condition/ REMARKS
60B-5 3'-5'	9/7/94	0835	Aria 60			X	1	X	X	Receipt: good 8.9°C
60B-4 5'-7'		1015				X	1	X	X	
60B-3 3'-5'		1050				X	1	X	X	
60B-2 3'-5'		1200				X	1	X	X	
60B-6 ~~3'-5'~~ 3'-5'		1230				X	1	X	X	
60B-3(dup) 3'-5'		1050				X	1	X	X	
FB-2		1645		X			4	X	X	
FB-4		1115		X			4	X	X	
										RJC 090994

DO THE SAMPLE(S) POSE ANY POTENTIAL HAZARD(S)? IF YES, PLEASE EXPLAIN: YES, POTENTIAL ~~HAZARDOUS~~ SUBSTANCE

SAMPLERS (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Michelle Schwoch	Michelle M. Schwoch		9/7/94	1800

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY		DATE	TIME		DATE	TIME
RJ Calder	RECEIVED	090994	0900	ACCEPTED	090994	0900

METHOD OF SHIPMENT: Federal Express
SPECIAL INSTRUCTIONS:

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the **Enseco** Terms and Conditions, unless a contract or purchase order has been executed and is sited above.

SAMPLE DESPOSITION:
1. Storage time requested: _____ days (Samples will be stored for thirty (30) days without additional charge; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: ☐ Yes ☒ No (**Enseco** will dispose of unreturned samples for a charge of $15.00. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

'ITION: WHITE - With Report; CANARY - To **ENSECO**; PINK - To Courier; GOLDENROD - To Sample Control

Enseco
A Corning Company

☒ 2544 Industrial Ave., West Sacramento, CA. 95691-3435 (916) 372-1393
☐ 7440 Lincoln Way, Garden Grove, CA. 92641-1432 (714) 898-8370
☐ 18501 East Gale Ave., City of Industry, CA. 91748-1321 (818) 965-1006
☐ Mobile Labs, 1 (800) ENSECO-8

DATE 9/7/94
LAB NUMBER

CHAIN OF CUSTODY NUMBER 14241
Page 2 of 2

CLIENT: Dames + Moore
ADDRESS: 2701 International Lane
CITY: Madison | STATE: WI | ZIP CODE: 53704
PROJECT NAME: 25713-009
CONTRACT/PURCHASE ORDER/QUOTE NO.

PROJECT MANAGER: David Trainor
TELEPHONE NUMBER (AREA CODE): (608) 244-1788
SITE CONTACT: David Trainor
TELEPHONE NUMBER (AREA CODE): (608) 244-1788

ANALYSES: DIOXIN | 8140's

SAMPLE NO./IDENTIFICATION	DATE	TIME	LAB/SAMPLE NUMBER	SAMPLE TYPE: LIQ.	AIR	SOLID	NO. OF CONTAINERS	DIOXIN	8140's	Sample Condition/ REMARKS
59B-9 1'-3'	9/7/94	1420	Characteristic Samples			X	1	X	X	@receipt: good 8.9c
60B-6 1'-3'		1440				X	1	X	X	
60B-7 1'-3'		1500				X	1	X	X	
60B-8 1'-3'		1520				X	1	X	X	
60B-9 1'-3'		1540				X	1	X	X	
61B-5 1'-3'		1620				X	1	X	X	
61B-6 1'-3'		1640				X	1	X	X	
62B-7 1'-3'		1600				X	1	X	X	
										EJC 090994

DO THE SAMPLE(S) POSE ANY POTENTIAL HAZARD(S)? IF YES, PLEASE EXPLAIN: YES POTENTIAL HAZARDOUS SUBSTANCE

SAMPLERS (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Michelle M. Stewart	Michelle M. Stewart		9/7/94	1800

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)		DATE	TIME
RECEIVED FOR LABORATORY BY		DATE	TIME		DATE	TIME
TW Calder	RECEIVED	090994	09:00	ACCEPTED	090994	09:00

METHOD OF SHIPMENT: Federal Express
SPECIAL INSTRUCTIONS:

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the **Enseco** Terms and Conditions, unless a contract or purchase order has been executed and is sited above.

SAMPLE DESPOSITION:
1. Storage time requested: _____ days (Samples will be stored for thirty (30) days without additional charge; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: ☐ Yes ☒ No (**Enseco** will dispose of unreturned samples for a charge of $15.00. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: WHITE - With Report; CANARY - To **ENSECO**; PINK - To Courier; GOLDENROD - **To Sample Control**

Enseco
Corning Environmental Servi

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: Method Blank
Lab ID: 077587-0001-MB
Matrix: SOIL Sampled: NA Received: NA
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 10.0 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.041	
PeCDFs (total)	ND	ng/g	0.027	
HxCDFs (total)	ND	ng/g	0.032	
Dioxins				
TCDDs (total)	ND	ng/g	0.015	
2,3,7,8-TCDD	ND	ng/g	0.015	
PeCDDs (total)	ND	ng/g	0.054	
HxCDDs (total)	ND	ng/g	0.046	
	% Recovery			
13C-2,3,7,8-TCDF	74			
13C-2,3,7,8-TCDD	81			
13C-1,2,3,7,8-PeCDD	93			
13C-1,2,3,6,7,8-HxCDD	73			

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

The cover letter is an integral part of this report.
Rev 230787

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Corning Environmental Servic

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 59B-9 1'-3'
Lab ID: 077587-0001-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.1 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.87	
PeCDFs (total)	ND	ng/g	0.24	
HxCDFs (total)	ND	ng/g	0.53	
Dioxins				
TCDDs (total)	2.3	ng/g	--	z
2,3,7,8-TCDD	ND	ng/g	0.42	
PeCDDs (total)	ND	ng/g	0.65	
HxCDDs (total)	ND	ng/g	0.67	
	% Recovery			
13C-2,3,7,8-TCDF	60			
13C-2,3,7,8-TCDD	69			
13C-1,2,3,7,8-PeCDD	78			
13C-1,2,3,6,7,8-HxCDD	62			

Note z : Result detected is below the lowest standard and above zero.

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

The cover letter is an integral part of this report.
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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-6 1'-3'
Lab ID: 077587-0002-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.1 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.51	
PeCDFs (total)	ND	ng/g	0.26	
HxCDFs (total)	ND	ng/g	0.34	
Dioxins				
TCDDs (total)	3.2	ng/g	--	z
2,3,7,8-TCDD	ND	ng/g	0.31	
PeCDDs (total)	ND	ng/g	0.68	
HxCDDs (total)	ND	ng/g	0.61	
	% Recovery			
13C-2,3,7,8-TCDF	56			
13C-2,3,7,8-TCDD	66			
13C-1,2,3,7,8-PeCDD	68			
13C-1,2,3,6,7,8-HxCDD	62			

Note z : Result detected is below the lowest standard and above zero.

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: Method Blank
Lab ID: 077587-0003-MB
Matrix: SOIL Sampled: NA Received: NA
Authorized: 09 SEP 94 Prepared: 27 SEP 94 Analyzed: 29 SEP 94

Sample Amount 10.0 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.042	
PeCDFs (total)	ND	ng/g	0.018	
HxCDFs (total)	ND	ng/g	0.026	
Dioxins				
TCDDs (total)	ND	ng/g	0.014	
2,3,7,8-TCDD	ND	ng/g	0.014	
PeCDDs (total)	ND	ng/g	0.043	
HxCDDs (total)	ND	ng/g	0.033	
	% Recovery			
13C-2,3,7,8-TCDF	72			
13C-2,3,7,8-TCDD	78			
13C-1,2,3,7,8-PeCDD	89			
13C-1,2,3,6,7,8-HxCDD	74			

ND = Not detected
NA = Not applicable

Reported By: Teri Vergara Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-7 1'-3'
Lab ID: 077587-0003-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 27 SEP 94 Analyzed: 29 SEP 94

Sample Amount 10.6 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.12	
PeCDFs (total)	ND	ng/g	0.030	
HxCDFs (total)	ND	ng/g	0.074	
Dioxins				
TCDDs (total)	0.20	ng/g	--	z
2,3,7,8-TCDD	ND	ng/g	0.048	
PeCDDs (total)	ND	ng/g	0.089	
HxCDDs (total)	ND	ng/g	0.061	w
	% Recovery			
13C-2,3,7,8-TCDF	34			
13C-2,3,7,8-TCDD	45			
13C-1,2,3,7,8-PeCDD	59			
13C-1,2,3,6,7,8-HxCDD	61			

Note z : Result detected is below the lowest standard and above zero.

Note w : EMPC - Estimated Maximum Possible Concentration.

ND = Not detected
NA = Not applicable

Reported By: Teri Vergara Approved By: Robert Hrabak

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Corning Environmental Serv

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-8 1'-3'
Lab ID: 077587-0004-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.1 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.61	
PeCDFs (total)	ND	ng/g	0.30	
HxCDFs (total)	ND	ng/g	0.60	
Dioxins				
TCDDs (total)	3.0	ng/g	--	z
2,3,7,8-TCDD	ND	ng/g	0.41	
PeCDDs (total)	ND	ng/g	0.73	
HxCDDs (total)	ND	ng/g	1.1	
	% Recovery			
13C-2,3,7,8-TCDF	69			
13C-2,3,7,8-TCDD	78			
13C-1,2,3,7,8-PeCDD	82			
13C-1,2,3,6,7,8-HxCDD	73			

Note z : Result detected is below the lowest standard and above zero.

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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Rev 230787

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Corning Environmental Serv

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-9 1'-3'
Lab ID: 077587-0005-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.1 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	15	
PeCDFs (total)	ND	ng/g	3.1	
HxCDFs (total)	ND	ng/g	3.2	
Dioxins				
TCDDs (total)	ND	ng/g	3.1	
2,3,7,8-TCDD	ND	ng/g	3.1	
PeCDDs (total)	ND	ng/g	8.9	
HxCDDs (total)	ND	ng/g	4.1	
	% Recovery			
13C-2,3,7,8-TCDF	12			
13C-2,3,7,8-TCDD	17			
13C-1,2,3,7,8-PeCDD	21			
13C-1,2,3,6,7,8-HxCDD	20			

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

The cover letter is an integral part of this report.
Rev 230787

APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 61B-5 1'-3'
Lab ID: 077587-0006-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 27 SEP 94 Analyzed: 29 SEP 94

Sample Amount 10.2 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.24	w
PeCDFs (total)	ND	ng/g	0.056	w
HxCDFs (total)	ND	ng/g	0.036	w
Dioxins				
TCDDs (total)	1.8	ng/g	--	
2,3,7,8-TCDD	ND	ng/g	0.056	
PeCDDs (total)	0.13	ng/g	--	z
HxCDDs (total)	0.25	ng/g	--	z
	% Recovery			
13C-2,3,7,8-TCDF	48			
13C-2,3,7,8-TCDD	82			
13C-1,2,3,7,8-PeCDD	70			
13C-1,2,3,6,7,8-HxCDD	73			

Note w : EMPC - Estimated Maximum Possible Concentration.

Note z : Result detected is below the lowest standard and above zero.

ND = Not detected
NA = Not applicable

Reported By: Teri Vergara Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 61B-6 1'-3'
Lab ID: 077587-0007-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.0 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	1.9	
PeCDFs (total)	ND	ng/g	0.95	
HxCDFs (total)	ND	ng/g	1.1	
Dioxins				
TCDDs (total)	2.8	ng/g	--	z
2,3,7,8-TCDD	ND	ng/g	1.0	
PeCDDs (total)	ND	ng/g	3.2	
HxCDDs (total)	ND	ng/g	1.5	
	% Recovery			
13C-2,3,7,8-TCDF	33			
13C-2,3,7,8-TCDD	47			
13C-1,2,3,7,8-PeCDD	53			
13C-1,2,3,6,7,8-HxCDD	51			

Note z : Result detected is below the lowest standard and above zero.

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 62B-7 1'-3'
Lab ID: 077587-0008-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 27 SEP 94 Analyzed: 29 SEP 94

Sample Amount 10.1 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.051	
PeCDFs (total)	ND	ng/g	0.025	
HxCDFs (total)	ND	ng/g	0.021	
Dioxins				
TCDDs (total)	ND	ng/g	0.028	w
2,3,7,8-TCDD	ND	ng/g	0.014	
PeCDDs (total)	ND	ng/g	0.037	
HxCDDs (total)	ND	ng/g	0.021	
	% Recovery			
13C-2,3,7,8-TCDF	69			
13C-2,3,7,8-TCDD	74			
13C-1,2,3,7,8-PeCDD	82			
13C-1,2,3,6,7,8-HxCDD	81			

Note w : EMPC - Estimated Maximum Possible Concentration.

ND = Not detected
NA = Not applicable

Reported By: Teri Vergara Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-5 3'-5'
Lab ID: 077587-0009-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.0 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	4.4	
PeCDFs (total)	ND	ng/g	0.46	
HxCDFs (total)	ND	ng/g	0.71	
Dioxins				
TCDDs (total)	ND	ng/g	1.7	
2,3,7,8-TCDD	ND	ng/g	1.7	
PeCDDs (total)	ND	ng/g	1.1	
HxCDDs (total)	ND	ng/g	1.2	
	% Recovery			
13C-2,3,7,8-TCDF	48			
13C-2,3,7,8-TCDD	56			
13C-1,2,3,7,8-PeCDD	65			
13C-1,2,3,6,7,8-HxCDD	58			

ND = Not detected
NA = Not applicable

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-4 5'-7'
Lab ID: 077587-0010-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.1 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	5.9	
PeCDFs (total)	ND	ng/g	0.81	
HxCDFs (total)	ND	ng/g	0.66	
Dioxins				
TCDDs (total)	ND	ng/g	90	w
2,3,7,8-TCDD	ND	ng/g	5.3	
PeCDDs (total)	ND	ng/g	2.0	
HxCDDs (total)	ND	ng/g	1.7	
	% Recovery			
13C-2,3,7,8-TCDF	41			
13C-2,3,7,8-TCDD	51			
13C-1,2,3,7,8-PeCDD	64			
13C-1,2,3,6,7,8-HxCDD	63			

Note w : EMPC - Estimated Maximum Possible Concentration.

ND = Not detected
NA = Not applicable

Reported By: Scott Barmby Approved By: Emily Uebelhoer

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-3 3'-5'
Lab ID: 077587-0011-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 27 SEP 94 Analyzed: 29 SEP 94

Sample Amount 10.0 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.11	
PeCDFs (total)	ND	ng/g	0.051	
HxCDFs (total)	ND	ng/g	0.044	
Dioxins				
TCDDs (total)	ND	ng/g	0.098	w
2,3,7,8-TCDD	ND	ng/g	0.035	
PeCDDs (total)	ND	ng/g	0.11	
HxCDDs (total)	ND	ng/g	0.091	
	% Recovery			
13C-2,3,7,8-TCDF	32			
13C-2,3,7,8-TCDD	37			
13C-1,2,3,7,8-PeCDD	41			
13C-1,2,3,6,7,8-HxCDD	42			

Note w : EMPC - Estimated Maximum Possible Concentration.

ND = Not detected
NA = Not applicable

Reported By: Teri Vergara Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-2 3'-5'
Lab ID: 077587-0012-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.0 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	1.5	
PeCDFs (total)	ND	ng/g	1.6	
HxCDFs (total)	ND	ng/g	2.9	
Dioxins				
TCDDs (total)	ND	ng/g	1.3	
2,3,7,8-TCDD	ND	ng/g	1.3	
PeCDDs (total)	ND	ng/g	4.0	
HxCDDs (total)	ND	ng/g	2.9	
	% Recovery			
13C-2,3,7,8-TCDF	50			
13C-2,3,7,8-TCDD	54			
13C-1,2,3,7,8-PeCDD	67			
13C-1,2,3,6,7,8-HxCDD	60			

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-6 3'-5'
Lab ID: 077587-0013-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 29 SEP 94 Analyzed: 30 SEP 94

Sample Amount 1.3 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	2.4	
PeCDFs (total)	ND	ng/g	1.8	
HxCDFs (total)	ND	ng/g	3.0	
Dioxins				
TCDDs (total)	ND	ng/g	1.8	
2,3,7,8-TCDD	ND	ng/g	1.8	
PeCDDs (total)	ND	ng/g	5.9	
HxCDDs (total)	ND	ng/g	4.2	
	% Recovery			
13C-2,3,7,8-TCDF	32			
13C-2,3,7,8-TCDD	39			
13C-1,2,3,7,8-PeCDD	60			
13C-1,2,3,6,7,8-HxCDD	50			

ND = Not detected
NA = Not applicable

Reported By: Scott Barmby Approved By: Emily Uebelhoer

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-3(dup) 3'-5'
Lab ID: 077587-0014-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 27 SEP 94 Analyzed: 29 SEP 94

Sample Amount 10.2 G
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/g	0.061	
PeCDFs (total)	ND	ng/g	0.044	
HxCDFs (total)	ND	ng/g	0.032	
Dioxins				
TCDDs (total)	ND	ng/g	0.10	w
2,3,7,8-TCDD	ND	ng/g	0.041	
PeCDDs (total)	ND	ng/g	0.054	
HxCDDs (total)	ND	ng/g	0.067	
	% Recovery			
13C-2,3,7,8-TCDF	71			
13C-2,3,7,8-TCDD	82			
13C-1,2,3,7,8-PeCDD	87			
13C-1,2,3,6,7,8-HxCDD	84			

Note w : EMPC - Estimated Maximum Possible Concentration.

ND = Not detected
NA = Not applicable

Reported By: Teri Vergara Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: Method Blank
Lab ID: 077587-0015-MB
Matrix: AQUEOUS Sampled: NA Received: NA
Authorized: 09 SEP 94 Prepared: 19 SEP 94 Analyzed: 27 SEP 94

Sample Amount 1.0 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.33	
PeCDFs (total)	ND	ng/L	0.33	
HxCDFs (total)	ND	ng/L	0.58	
Dioxins				
TCDDs (total)	ND	ng/L	0.31	
2,3,7,8-TCDD	ND	ng/L	0.31	
PeCDDs (total)	ND	ng/L	0.78	
HxCDDs (total)	ND	ng/L	0.45	
	% Recovery			
13C-2,3,7,8-TCDF	84			
13C-2,3,7,8-TCDD	92			
13C-1,2,3,7,8-PeCDD	95			
13C-1,2,3,6,7,8-HxCDD	95			

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: FB-2
Lab ID: 077587-0015-SA
Matrix: AQUEOUS Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 19 SEP 94 Analyzed: 28 SEP 94

Sample Amount 1.04 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.45	
PeCDFs (total)	ND	ng/L	0.18	
HxCDFs (total)	ND	ng/L	0.23	
Dioxins				
TCDDs (total)	ND	ng/L	0.073	
2,3,7,8-TCDD	ND	ng/L	0.073	
PeCDDs (total)	ND	ng/L	0.42	
HxCDDs (total)	ND	ng/L	0.26	
	% Recovery			
13C-2,3,7,8-TCDF	67			
13C-2,3,7,8-TCDD	79			
13C-1,2,3,7,8-PeCDD	77			
13C-1,2,3,6,7,8-HxCDD	64			

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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APPENDIX IX DIOXINS/FURANS

LOW RESOLUTION

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: FB-4
Lab ID: 077587-0016-SA
Matrix: AQUEOUS Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 19 SEP 94 Analyzed: 28 SEP 94

Sample Amount 1.06 L
Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.30	
PeCDFs (total)	ND	ng/L	0.12	
HxCDFs (total)	ND	ng/L	0.14	
Dioxins				
TCDDs (total)	ND	ng/L	0.11	
2,3,7,8-TCDD	ND	ng/L	0.11	
PeCDDs (total)	ND	ng/L	0.32	
HxCDDs (total)	ND	ng/L	0.22	
	% Recovery			
13C-2,3,7,8-TCDF	80			
13C-2,3,7,8-TCDD	95			
13C-1,2,3,7,8-PeCDD	91			
13C-1,2,3,6,7,8-HxCDD	77			

ND = Not detected
NA = Not applicable

Reported By: Emily Uebelhoer Approved By: Robert Hrabak

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QC LOT ASSIGNMENT REPORT
Special Services - Low Resolution Mass Spectrometry

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
077587-0001-MB	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0001-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0002-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0003-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0003-MB	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0004-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0005-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0006-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0007-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0008-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0009-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0010-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0011-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0012-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0013-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0014-SA	SOLID	DXNFUR-S	27 SEP 94-A	-
077587-0015-MB	AQUEOUS	DXNFUR-A	26 AUG 94-A	-
077587-0015-SA	AQUEOUS	DXNFUR-A	26 AUG 94-A	-
077587-0016-SA	AQUEOUS	DXNFUR-A	26 AUG 94-A	-

DUPLICATE CONTROL SAMPLE REPORT
Special Services - Low Resolution Mass Spectrometry

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precis (RPD) DCS	Lir
Category: DXNFUR-S Matrix: SOLID QC Lot: 27 SEP 94-A Concentration Units: ng/sample								
2,3,7,8-TCDF	10	10.4	10.9	10.6	107	72-118	4.7	1:
2,3,4,7,8-PeCDF	10	7.65	8.43	8.04	80	54-129	9.7	1:
1,2,3,4,7,8-HxCDF	10	10.0	10.7	10.4	104	50-150	6.8	3(
1,2,3,4,6,7,8-HpCDF	10	8.40	9.09	8.74	87	50-150	7.9	5(
OCDF	50	64.6	67.8	66.2	132	50-150	4.8	2:
2,3,7,8-TCDD	10	10.0	10.2	10.1	101	55-136	2.0	1:
1,2,3,7,8-PeCDD	10	9.24	9.80	9.52	95	67-139	5.9	1(
1,2,3,4,7,8-HxCDD	10	10.1	10.7	10.4	104	57-132	5.8	1(
1,2,3,4,6,7,8-HpCDD	10	9.59	10.2	9.90	99	50-138	6.2	1:
OCDD	50	50.2	53.0	51.6	103	50-149	5.4	1:
Category: DXNFUR-A Matrix: AQUEOUS QC Lot: 26 AUG 94-A Concentration Units: ng/sample								
2,3,7,8-TCDF	10	10.7	10.9	10.8	108	62-129	1.9	1(
2,3,4,7,8-PeCDF	10	9.26	9.15	9.20	92	51-132	1.2	2(
1,2,3,4,7,8-HxCDF	10	11.2	11.1	11.2	112	50-146	0.9	41
1,2,3,4,6,7,8-HpCDF	10	9.32	9.57	9.44	94	50-150	2.6	5(
OCDF	50	64.3	64.8	64.6	129	50-150	0.8	2(
2,3,7,8-TCDD	10	10.6	10.5	10.6	106	57-128	0.9	2(
1,2,3,7,8-PeCDD	10	11.1	11.1	11.1	111	80-125	0.0	2:
1,2,3,4,7,8-HxCDD	10	10.9	11.0	11.0	110	64-127	0.9	2:
1,2,3,4,6,7,8-HpCDD	10	10.4	10.3	10.4	104	60-131	1.0	2:
OCDD	50	55.1	55.8	55.4	111	50-147	1.3	2(

Calculations are performed before rounding to avoid round-off errors in calculated results

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 59B-9 1'-3'
Lab ID: 077587-0001-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	200	
Disulfoton	ND	ug/kg	200	
Ethyl parathion	ND	ug/kg	200	
Famphur	ND	ug/kg	66	
Methyl parathion	ND	ug/kg	200	
Phorate (Thimet)	ND	ug/kg	200	j
Sulfotepp	ND	ug/kg	66	
Thionazin	ND	ug/kg	66	
O,O,O-Triethylphosphorothioate	ND	ug/kg	66	
Surrogate	**Recovery**			
Ethion	82	%		

Note j : All Reporting Limits for this sample raised due to matrix interferences.

ND = Not detected
NA = Not applicable

Reported By: Claire Hanamoto Approved By: Jon Edmondson

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-6 1'-3'
Lab ID: 077587-0002-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 22 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphoro-thioate	ND	ug/kg	330	
Surrogate	Recovery			
Ethion	94	%		J

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note J : Result is detected below the reporting limit or is an estimated concentration.

ND = Not detected
NA = Not applicable

Reported By: Claire Hanamoto Approved By: Jon Edmondson

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-7 1'-3'
Lab ID: 077587-0003-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	10000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	225	%		IJ

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

Note J : Result is detected below the reporting limit or is an estimated concentration.

ND = Not detected
NA = Not applicable

Reported By: Claire Hanamoto Approved By: Jon Edmondson

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-8 1'-3'
Lab ID: 077587-0004-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 22 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	114	%		J

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note J : Result is detected below the reporting limit or is an estimated concentration.

ND = Not detected
NA = Not applicable

Reported By: Claire Hanamoto Approved By: Jon Edmondson

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-9 1'-3'
Lab ID: 077587-0005-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 22 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphoro-thioate	ND	ug/kg	330	
Surrogate	Recovery			
Ethion	218	%		IJ

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

Note J : Result is detected below the reporting limit or is an estimated concentration.

ND = Not detected
NA = Not applicable

Reported By: Claire Hanamoto Approved By: Jon Edmondson

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 61B-5 1'-3'
Lab ID: 077587-0006-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 22 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	78	%		

Note j : All Reporting Limits for this sample raised due to matrix interferences.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 61B-6 1'-3'
Lab ID: 077587-0007-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	200	
Disulfoton	ND	ug/kg	200	
Ethyl parathion	ND	ug/kg	200	
Famphur	ND	ug/kg	66	
Methyl parathion	ND	ug/kg	200	
Phorate (Thimet)	ND	ug/kg	200	j
Sulfotepp	ND	ug/kg	66	
Thionazin	ND	ug/kg	66	
O,O,O-Triethylphosphorothioate	ND	ug/kg	66	
Surrogate	**Recovery**			
Ethion	97	%		

Note j : All Reporting Limits for this sample raised due to matrix interferences.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 62B-7 1'-3'
Lab ID: 077587-0008-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit
Dimethoate	ND	ug/kg	200
Disulfoton	ND	ug/kg	200
Ethyl parathion	ND	ug/kg	200
Famphur	ND	ug/kg	66
Methyl parathion	ND	ug/kg	200
Phorate (Thimet)	300	ug/kg	200
Sulfotepp	ND	ug/kg	66
Thionazin	ND	ug/kg	66
O,O,O-Triethylphosphorothioate	ND	ug/kg	66
Surrogate	**Recovery**		
Ethion	94	%	(j)

Note j : All Reporting Limits for this sample raised due to matrix interferences.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-5 3'-5'
Lab ID: 077587-0009-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	10000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	10000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	10000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphoro-thioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	299	%		IJ

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

Note J : Result is detected below the reporting limit or is an estimated concentration.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-4 5'-7'
Lab ID: 077587-0010-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	10000	
Disulfoton	ND	ug/kg	10000	
Ethyl parathion	ND	ug/kg	10000	
Famphur	ND	ug/kg	3300	
Methyl parathion	ND	ug/kg	10000	
Phorate (Thimet)	ND	ug/kg	10000	j
Sulfotepp	ND	ug/kg	3300	
Thionazin	ND	ug/kg	3300	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	1290	%		I

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-3 3'-5'
Lab ID: 077587-0011-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	10000	
Disulfoton	ND	ug/kg	10000	
Ethyl parathion	ND	ug/kg	10000	
Famphur	ND	ug/kg	3300	
Methyl parathion	ND	ug/kg	10000	
Phorate (Thimet)	ND	ug/kg	10000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	3300	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	788	%		I

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-2 3'-5'
Lab ID: 077587-0012-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	**Recovery**			
Ethion	ND	%		I

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-6 3'-5'
Lab ID: 077587-0013-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	1000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	1000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	1000	
Phorate (Thimet)	ND	ug/kg	1000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphoro-thioate	ND	ug/kg	330	
Surrogate	Recovery			
Ethion	261	%		IJ

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

Note J : Result is detected below the reporting limit or is an estimated concentration.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: 60B-3(dup) 3'-5'
Lab ID: 077587-0014-SA
Matrix: SOIL Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 16 SEP 94 Analyzed: 23 SEP 94

Parameter	Result	Units	Reporting Limit	
Dimethoate	ND	ug/kg	2000	
Disulfoton	ND	ug/kg	1000	
Ethyl parathion	ND	ug/kg	2000	
Famphur	ND	ug/kg	330	
Methyl parathion	ND	ug/kg	2000	
Phorate (Thimet)	ND	ug/kg	2000	j
Sulfotepp	ND	ug/kg	330	
Thionazin	ND	ug/kg	330	
O,O,O-Triethylphosphorothioate	ND	ug/kg	330	
Surrogate	Recovery			
Ethion	317	%		I

Note j : All Reporting Limits for this sample raised due to matrix interferences.

Note I : Surrogate recovery outside of limits due to sample matrix interference.

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: FB-2
Lab ID: 077587-0015-SA
Matrix: AQUEOUS Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 15 SEP 94 Analyzed: 22 SEP 94

Parameter	Result	Units	Reporting Limit
Dimethoate	ND	ug/L	1.0
Disulfoton	ND	ug/L	1.0
Ethyl parathion	ND	ug/L	1.0
Famphur	ND	ug/L	1.0
Methyl parathion	ND	ug/L	1.0
Phorate (Thimet)	ND	ug/L	1.0
Sulfotepp	ND	ug/L	1.0
Thionazin	ND	ug/L	1.0
O,O,O-Triethylphosphoro-thioate	ND	ug/L	1.0
Surrogate	Recovery		
Ethion	78	%	

ND = Not detected
NA = Not applicable

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Appendix IX Organophosphate Pesticides

Method 8140

Client Name: Clean Harbors Analytical Services, Inc.
Client ID: FB-4
Lab ID: 077587-0016-SA
Matrix: AQUEOUS Sampled: 07 SEP 94 Received: 09 SEP 94
Authorized: 09 SEP 94 Prepared: 15 SEP 94 Analyzed: 22 SEP 94

Parameter	Result	Units	Reporting Limit
Dimethoate	ND	ug/L	1.0
Disulfoton	ND	ug/L	1.0
Ethyl parathion	ND	ug/L	1.0
Famphur	ND	ug/L	1.0
Methyl parathion	ND	ug/L	1.0
Phorate (Thimet)	ND	ug/L	1.0
Sulfotepp	ND	ug/L	1.0
Thionazin	ND	ug/L	1.0
O,O,O-Triethylphosphorothioate	ND	ug/L	1.0
Surrogate	**Recovery**		
Ethion	86	%	

ND = Not detected
NA = Not applicable

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QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
077587-0001-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0002-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0003-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0004-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0005-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0006-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0007-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0008-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0009-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0010-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0011-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0012-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0013-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A
077587-0014-SA	SOIL	8140-AP9-S	15 SEP 94-36A	15 SEP 94-36A

METHOD BLANK REPORT
Semivolatile Organics by GC

Test: 8140-AP9-S
Matrix: SOIL
QC Lot: 15 SEP 94-36A QC Run: 15 SEP 94-36A

Analyte	Result	Units	Reporting Limit
Dimethoate	ND	ug/kg	100
Disulfoton	ND	ug/kg	100
Ethyl parathion	ND	ug/kg	100
Famphur	ND	ug/kg	33
Methyl parathion	ND	ug/kg	100
Phorate (Thimet)	ND	ug/kg	100
Sulfotepp	ND	ug/kg	33
Thionazin	ND	ug/kg	33
O,O,O-Triethylphosphoro-thioate	ND	ug/kg	33

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precisic (RPD) DCS	Lim
Category: 8140-AP9-S								
Matrix: SOIL								
QC Lot: 15 SEP 94-36A								
Concentration Units: ug/kg								
Phorate (Thimet)	167	117	126	121	73	55-108	7.4	28.
Thionazin	167	121	128	124	75	61-116	6.1	33.
Ethyl parathion	167	152	154	153	92	76-113	1.0	14.
Famphur	167	148	149	149	89	72-136	0.7	15.

Calculations are performed before rounding to avoid round-off errors in calculated results.

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 8140-AP9-S				
Matrix: SOIL				
QC Lot: 15 SEP 94-36A QC Run: 15 SEP 94-36A				
Concentration Units: ug/kg				
Ethion	166	139	84	56-122

Calculations are performed before rounding to avoid round-off errors in calculated results

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
077587-0015-SA	AQUEOUS	614-AP9-A	09 SEP 94-36A	15 SEP 94-36A
077587-0016-SA	AQUEOUS	614-AP9-A	09 SEP 94-36A	15 SEP 94-36A

METHOD BLANK REPORT
Semivolatile Organics by GC

Test: 8140-AP9-A
Matrix: AQUEOUS
QC Lot: 09 SEP 94-36A QC Run: 15 SEP 94-36A

Analyte	Result	Units	Reporting Limit
Dimethoate	ND	ug/L	1.0
Disulfoton	ND	ug/L	1.0
Ethyl parathion	ND	ug/L	1.0
Famphur	ND	ug/L	1.0
Methyl parathion	ND	ug/L	1.0
Phorate (Thimet)	ND	ug/L	1.0
Sulfotepp	ND	ug/L	1.0
Thionazin	ND	ug/L	1.0
O,O,O-Triethylphosphorothioate	ND	ug/L	1.0

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Category: 614-AP9-A Organophosphate Pesticides (Appendix IX)				
Matrix: AQUEOUS				
QC Lot: 09 SEP 94-36A QC Run: 15 SEP 94-36A				
Concentration Units: ug/L				
Ethyl parathion	2.50	2.15	86	39-113
Famphur	2.50	2.14	86	40-120
Phorate (Thimet)	2.50	1.52	61	40-120
Thionazin	2.50	1.73	69	40-120

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precisi (RPD) DCS	Lim
Category: 614-AP9-A Matrix: AQUEOUS QC Lot: 09 SEP 94-36A Concentration Units: ug/L								
Ethyl parathion	2.5	2.14	2.40	2.27	91	39-113	11	17.
Famphur	2.5	2.29	2.69	2.49	100	40-120	16	25.
Phorate (Thimet)	2.5	1.90	2.11	2.01	80	40-120	10	25.
Thionazin	2.5	2.01	2.27	2.14	86	40-120	12	25.

Calculations are performed before rounding to avoid round-off errors in calculated results

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 614-AP9-A				
Matrix: AQUEOUS				
QC Lot: 09 SEP 94-36A QC Run: 15 SEP 94-36A				
Concentration Units: ug/L				
Ethion	2.50	2.10	84	67-117

Calculations are performed before rounding to avoid round-off errors in calculated results.

EVALUATION OF POLYCHLORINATED DIBENZO-*p*-DIOXIN (PCDD) & POLYCHLORINATED DIBENZOFURAN (PCDF) ANALYSES

Soil boring samples were collected from a total of 40 locations in five distinct areas at the site. Four duplicate samples were analyzed as part of a QA/QC check. Among these 40 soil boring locations, 13 samples were collected from 1-3 feet below the surface, 26 were collected from 3-5 feet below the surface, and the remaining sample was collected from a boring 5-7 feet below the surface. The soil samples were analyzed for the TCDD, PeCDD, HxCDD, TCDF, PeCDF, and HxCDF homologues, as well as for the most toxic congener: 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD). The analytical results for the five areas are summarized in the attached Tables 1 through 5. It is noteworthy that no 2,3,7,8-TCDD was detected in any of the soil samples, and the low frequency of detection of the PCDF homologues (PeCDF and HxCDF were detected in only one sample location each)

If a homologue was detected in an area (*i.e.*, at least one concentration value was not accompanied with a "U" data qualifier), its average concentration was calculated as follows. First, duplicate samples were averaged together before averaging among sample points. Second, nondetects were included in the calculation of the homologue average by substituting one-half of the sample-specific detection limit.

In order to provide a scientific basis for understanding these analytical results two additional calculations were conducted on the average homologue concentration data for each area. First, the 2,3,7,8-substituted congener concentrations were estimated from the parent homologue values. The 2,3,7,8-substituted congener concentrations were estimated because of convincing evidence that only PCDD and PCDF compounds with chlorine atoms at these positions have 2,3,7,8-TCDD-like biological activity. Absent congener-specific analyses, U.S. EPA has developed a screening level approach for estimating these values from homologue data. (U.S. Environmental Protection Agency, 1994c, p. 3-8) In essence, the procedure assumes that all congeners from a homologue class are equally likely to be present. An estimate of a homologue's 2,3,7,8-substituted congener concentration is obtained by multiplying the homologue concentration by the proportion of that homologue's congeners that are 2,3,7,8-substituted. For instance, three of the ten congeners in the HxCDD homologue class are 2,3,7,8-substituted. Thus, 0.3 times the total HxCDD homologue concentration equals an estimate of the concentration of the 2,3,7,8-substituted HxCDDs. This estimation technique may be overly conservative. For example, while this methodology would estimate that 4.5 percent of the TCDD homologue mass is 2,3,7,8-TCDD, analysis of mass emissions from a rotary kiln waste incinerator indicate that the mass of 2,3,7,8-TCDD emissions is at least five-fold lower than this prediction. (U.S. Environmental Protection Agency, 1994c, p. 3-9) Moreover, uninformed use of the U.S. EPA methodology would estimate that 2,3,7,8-TCDD would be present, yet none was detected with sample-specific detection limits that ranged as low as 17.9 times lower than the predicted concentration.

Second, the estimated 2,3,7,8-substituted congener concentrations were multiplied by their respective 2,3,7,8-TCDD Toxicity Equivalency Factors (TEFs) (U.S. Environmental Protection Agency, 1994a, p. 3) to yield an estimate of the total 2,3,7,8-TCDD equivalents (TEQs). As

can be seen from Tables 1 through 5, all of the areas had estimated TEQs less than 1 ppb. The average TEQ values for the five areas ranged from 0.015 to 0.10 ppb, or from one-tenth to one-sixty-seventh of the U.S. EPA Superfund 1 ppb TEQ cleanup criterion.

The low levels of PCDDs and PCDFs present in the subsurface soil borings at the CWMCS facility appear to be consistent with soil levels reported in the literature for other urban areas. (U.S. Environmental Protection Agency, 1994b, Appendices B-1 and B-2) Given that the site was constructed on non-native soils, consisting of heterogeneous fill material deposited over a lengthy period of time, some evidence of PCDD and PCDF contamination is not unexpected. The fill material may well be the source of the PCDDs and PCDFs. Supporting this hypothesis is the absence of concomitant chlorophenolic and chlorophenoxy herbicide contamination of the soil that would indicate migration of surface spills. The abundance (or lack thereof) of the different PCDD and PCDF homologues, and their relative ratios to one another argues against surface deposition and migration of incinerator emissions as being the source. Further, the physical and chemical characteristics of PCDDs and PCDFs (vanishingly small water solubility, high affinity for soil organic carbon, minuscule vapor pressure, and persistence) argue against any surface contamination as being the source of these compounds. Finally, despite recent evidence about other sources of PCDDs and PCDFs (*e.g.*, diesel exhaust, metals processing), it seems most likely that the fill material soils themselves were contaminated with low levels of PCDDs and PCDFs some years ago prior to their being deposited on the site.

REFERENCES

U.S. Environmental Protection Agency (1994a). Estimating Exposure to Dioxin-like Compounds. Volume I: Executive Summary. External Review Draft. (EPA/600/6-88/005Ca). Exposure Assessment Group, Office of Health and Environmental Assessment, Office of Research and Development, External Review Draft, June 1994.

U.S. Environmental Protection Agency (1994b). Estimating Exposure to Dioxin-like Compounds. Volume II: Properties, Sources, Occurrence and Background Exposures. External Review Draft. (EPA/600/6-88/005Cb). Exposure Assessment Group, Office of Health and Environmental Assessment, Office of Research and Development, External Review Draft, June 1994.

U.S. Environmental Protection Agency (1994c). Estimating Exposure to Dioxin-like Compounds. Volume III: Site-Specific Assessment Procedures. External Review Draft. (EPA/600/6-88/005Cc). Exposure Assessment Group, Office of Health and Environmental Assessment, Office of Research and Development, External Review Draft, June 1994.

Table 1. Analytical Results for Soil Borings from Unit 13 - Rail Car (ug/kg – ppb)

CHEMICAL	B-1 Conc.	B-1 Data Qualifier	B-2 Conc.	B-2 Data Qualifier	B-2 (Dupl.) Conc.	B-2 (Dupl.) Data Qualifier	B-3 Conc.	B-3 Data Qualifier	B-4 Conc.	B-4 Data Qualifier	B-5 Conc.	B-5 Data Qualifier	B-6 Conc.	B-6 Data Qualifier	B-7 Conc.	B-7 Data Qualifier	Sample Point Frequency of Detection	Average Conc.*	Estimated 2,3,7,8-Congener Homologue Multiplier**	Estimated 2,3,7,8-Congener Concentration	Toxicity Equivalency Factors (TEFs) for 2,3,7,8-CDDs & CDFs#	Estimated TEQ
Polychlorinated Dibenzodioxins																						
TCDD	2.8		9.3		8.3		0.52		0.4	U	2.3		3.8		0.52		6/7	2.71	0.045	0.12	N/A	N/A
2,3,7,8-TCDD	0.041	U	0.052	U	0.085	U	0.028	U	0.4	U	0.045	U	0.024	U	0.021	U	0/7	0.00	N/A	0.00	1	0.000
PeCDD	3.4		2.4		1.7		0.46		3.3		1.1		2.5		0.45	U	6/7	1.86	0.071	0.13	0.5	0.067
HxCDD	1.7		2.3		1.4		0.25		1.9		0.8		1.5		0.28	U	6/7	1.16	0.300	0.35	0.1	0.035
Polychlorinated Dibenzofurans																						
TCDF	0.33	U	0.5		0.34		0.061	U	0.54	U	0.32		0.2	U	0.049	U	3/7	0.19	0.026	0.0050	0.1	0.0005
PeCDF	0.12	U	0.21	U	0.089	U	0.021	U	0.17	U	0.14	U	0.11	U	0.062	U	0/7	0.00	0.071	0.00	0.5 & 0.05	0.00
HxCDF	0.051	U	0.14	U	0.14	U	0.035	U	0.098	U	0.061	U	0.11	U	0.039	U	0/7	0.00	0.250	0.00	0.1	0.00
																					Total TEQ	0.10
Organophosphate Pesticides																						
Phorate	U		U		U		U		U		U		U		U		0/7	0.00	N/A	N/A	N/A	N/A
O,O,O-Triphosphorothioate	U		U		U		U		U		U		U		U		0/7	0.00	N/A	N/A	N/A	N/A
All Others	U		U		U		U		U		U		U		U		0/7	0.00	N/A	N/A	N/A	N/A

* For each area, average concentrations for each chemical were calculated assuming nondetects were equal to DL/2 if that chemical was detected in the area.
* For each area, average concentrations for each chemical were calculated after averaging duplicate sample analyses
** (U.S. EPA, 1994c, p. 3-8)
# (U.S. EPA, 1994a, p. 3)
N/A = Not Applicable
NC = Not Calculated

Table 2. Analytical Results for Soil Borings from Unit 59 - Ignitable Truck Staging Area (ug/kg – ppb)

CHEMICAL	B-1 Conc.	B-1 Data Qualifier	B-2 Conc.	B-2 Data Qualifier	B-3 Conc.	B-3 Data Qualifier	B-4 Conc.	B-4 Data Qualifier	B-5 Conc.	B-5 Data Qualifier	B-5 (Dupl.) Conc.	B-5 (Dupl.) Data Qualifier	B-6 Conc.	B-6 Data Qualifier	B-7 Conc.	B-7 Data Qualifier	B-8 Conc.	B-8 Data Qualifier	B-9 Conc.	B-9 Data Qualifier	Sample Point Frequency of Detection	Average Conc.*	Estimated 2,3,7,8-Congener Homologue Multiplier**	Estimated 2,3,7,8-Congener Concentration	Toxicity Equivalency Factors (TEFs) for 2,3,7,8-CDDs & CDFs #	Estimated TEQ
Polychlorinated Dibenzodioxins																										
TCDD	0.33	U	0.50		0.57		1.4		3.2		3.6		1.0		5.9		3.6		2.3		8/9	2.10	0.045	0.095	N/A	N/A
2,3,7,8-TCDD	0.033	U	0.076	U	0.057	U	0.018	U	0.030	U	0.055	U	0.083	U	0.029	U	0.042	U	0.42	U	0/9	0.00	N/A	0.000	1	0.000
PeCDD	0.15	U	0.45	U	0.36	U	0.79		1.7		1.7		0.97		5.2		2.0		0.65	U	5/9	1.05	0.071	0.075	0.5	0.038
HxCDD	0.084	U	0.13	U	0.19	U	0.36	U	0.62		0.74		0.46		1.3		1.0		0.07	U	4/9	0.47	0.300	0.142	0.1	0.014
Polychlorinated Dibenzofurans																										
TCDF	0.068	U	0.12	U	0.096	U	0.072	U	0.048	U	0.046	U	0.30	U	0.087	U	0.11	U	0.87	U	0/9	0.00	0.026	0.00	0.1	0.000
PeCDF	0.12	U	0.056	U	0.040	U	0.038	U	0.023	U	0.026	U	0.15	U	0.047	U	0.034	U	0.24	U	0/9	0.00	0.071	0.00	0.5 & 0.05	0.000
HxCDF	0.067	U	0.064	U	0.045	U	0.052	U	0.028	U	0.035	U	0.11	U	0.042	U	0.055	U	0.63	U	0/9	0.00	0.250	0.00	0.1	0.000
																									Total TEQ	0.052
Organophosphate Pesticides																										
Phorate	U		U		U		U		U		U		U		U		U		U		0/9	0.00	N/A	N/A	N/A	N/A
O,O,O-Triphosphorothioate	U		U		U		U		U		U		U		U		U		U		0/9	0.00	N/A	N/A	N/A	N/A
All Others	U		U		U		U		U		U		U		U		U		U		0/9	0.00	N/A	N/A	N/A	N/A

* For each area, average concentrations for each chemical were calculated assuming nondetects were equal to DL/2 if that chemical were detected in the area.
* For each area, average concentrations for each chemical were calculated after averaging duplicate sample analyses.
** (U.S. EPA, 1994c, p. 3-8)
# (U.S. EPA, 1994a, p. 3)
N/A = Not Applicable
NC = Not Calculated

Table 3. Analytical Results for Soil Borings from Unit 69 - Reliefl Storage Area (ug/kg = ppb)

CHEMICAL	B-1 Conc.	B-1 Data Qualifier	B-2 Conc.	B-2 Data Qualifier	B-5 Conc.	B-5 Data Qualifier	B-3 (Dupl.) Conc.	B-3 (Dupl.) Data Qualifier	B-4 Conc.	B-4 Data Qualifier	B-6 Conc.	B-6 Data Qualifier	B-6 (1-3) Conc.	B-6 (1-3) Data Qualifier	B-6 (3-6) Conc.	B-6 (3-6) Data Qualifier	B-7 Conc.	B-7 Data Qualifier	B-8 Conc.	B-8 Data Qualifier	B-9 Conc.	B-9 Data Qualifier	Sample Pool Frequency of Detection	Average Conc.*	Estimated 2,3,7,8-Congener Homologue Multiplier**	Estimated 2,3,7,8-Congener Concentration	Toxicity Equivalency Factors (TEFs) for 2,3,7,8-CDDs & CDFs#	Estimated TEQ
Polychlorinated Dibenzodioxins																												
TCDD	5.9	U	1.3	U	0.056	U	0.1	U	90.0	U	1.7	U	3.2		1.8	U	0.20		9.0		3.1	U	3/10	5.83	0.045	0.265		N/A	N/A
2,3,7,8-TCDD	0.98	U	1.3	U	0.035	U	0.041	U	6.3	U	1.7	U	0.31	U	1.8	U	0.048	U	0.41	U	3.1	U	0/10	0.00	N/A	0.000		1	0.000
PeCDD	6.96	U	4.6	U	0.11	U	0.054	U	2.9	U	1.1	U	0.58	U	5.9	U	0.069	U	0.73	U	5.8	U	0/10	0.00	0.071	0.000		0.6	0.000
HxCDD	2.2	U	2.5	U	0.091	U	0.081		1.7	U	1.2	U	0.61	U	4.2	U	0.061		1.1	U	4.1	U	2/10	0.91	0.300	0.274		0.1	0.027
Polychlorinated Dibenzofurans																													
TCDF	2.6	U	1.5	U	0.11	U	0.081	U	6.9	U	4.4	U	0.51	U	2.4	U	0.12	U	0.61	U	15.8	U	0/10	0.00	0.029	0.00		0.1	0.000
PeCDF	3.2	U	1.8	U	0.051	U	0.044	U	0.81	U	0.48	U	0.29	U	1.8	U	0.038	U	0.30	U	3.1	U	0/10	0.00	0.071	0.00		0.5 & 0.05	0.000
HxCDF	1.8	U	2.9	U	0.044	U	0.032	U	0.65	U	0.71	U	0.34	U	3.0	U	0.074	U	0.60	U	3.2	U	0/10	0.00	0.258	0.00		0.1	0.000
																												Total TEQ	0.027
Organophosphate Pesticides																													
Phorate	U		U		U		U		U		U		U		U		U		U		U		0/10	0.00	N/A	N/A		N/A	N/A
O,O,O-Triphosphorothioate	39		U		U		U		U		U		U		U		U		U		U		1/10	NC	N/A	N/A		N/A	N/A
All Others	U		U		U		U		U		U		U		U		U		U		U		0/10	0.00	N/A	N/A		N/A	N/A

*For each area, average concentrations for each chemical were calculated assuming nondetects were equal to DL/2 if that chemical were detected in the area.
* For each area, average concentrations for each chemical were calculated after averaging duplicate sample analyses.
** (U.S. EPA, 1994c, p. 3-8)
# (U.S. EPA, 1994a, p. 3)
N/A = Not Applicable
NC = Not Calculated

Table 4. Analytical Results for Soil Borings from Unit 61 - Container Handling Dock (ug/kg -- ppb)

CHEMICAL	B-1 Conc.	B-1 Data Qualifier	B-1 (Dupl.) Conc.	B-1 (Dupl.) Data Qualifier	B-2 Conc.	B-2 Data Qualifier	B-3 Conc.	B-3 Data Qualifier	B-4 Conc.	B-4 Data Qualifier	B-5 Conc.	B-5 Data Qualifier	B-6 Conc.	B-6 Data Qualifier	B-7 Conc.	B-7 Data Qualifier	Sample Point Frequency of Detection	Average Conc.*	Estimated 2,3,7,8-Congener Homologue Multiplier**	Estimated 2,3,7,8-Congener Concentration	Toxicity Equivalency Factors (TEFs) for 2,3,7,8-CDDs & CDFs#	Estimated TEQ
Polychlorinated Dibenzodioxins																						
TCDD	0.012	U	0.019	U	0.013	U	0.028	U	0.024	U	1.8		2.8		0.026	U	2/7	0.66	0.045	0.030	N/A	N/A
2,3,7,8-TCDD	0.012	U	0.019	U	0.013	U	0.028	U	0.024	U	0.058	U	1.0	U	0.014	U	0/7	0.00	N/A	0.000	1	0.000
PeCDD	0.060	U	0.12	U	0.068	U	0.12	U	0.10	U	0.13		3.2	U	0.037	U	1/7	0.26	0.071	0.020	0.5	0.010
HxCDD	0.048	U	0.054	U	0.059	U	0.04	U	0.058	U	0.25		1.5	U	0.021	U	1/7	0.16	0.300	0.048	0.1	0.005
Polychlorinated Dibenzofurans																						
TCDF	0.11	U	0.064	U	0.083	U	0.09	U	0.13	U	0.24	U	1.9	U	0.051	U	0/7	0.00	0.026	0.00	0.1	0.000
PeCDF	0.024	U	0.024	U	0.029	U	0.042	U	0.033	U	0.056	U	0.95	U	0.025	U	0/7	0.00	0.071	0.00	0.5 & 0.05	0.000
HxCDF	0.033	U	0.050	U	0.041	U	0.052	U	0.039	U	0.038	U	1.1	U	0.021	U	0/7	0.00	0.250	0.00	0.1	0.000
																					Total TEQ	0.015
Organophosphate Pesticides																						
Phorate	U		Pend.		U		U		U		U		U				0/6	0.00	N/A	N/A	N/A	N/A
O,O,O-Triphosphorothioate	U		Pend.		U		U		U		U		U				0/6	0.00	N/A	N/A	N/A	N/A
All Others	U		Pend.		U		U		U		U		U				0/6	0.00	N/A	N/A	N/A	N/A

* For each area, average concentrations for each chemical were calculated assuming nondetects were equal to DL/2 if that chemical were detected in the area.
* For each area, average concentrations for each chemical were calculated after averaging duplicate sample analyses.
** (U.S. EPA, 1994c, p. 3-8)
# (U.S. EPA, 1994a, p. 3)
N/A = Not Applicable
NC = Not Calculated

Table 6. Analytical Results for Soil Borings from Unit 62 - Container Dock Truck Parking Pad (ug/kg – ppb)

CHEMICAL	B-1 Conc.	B-1 Data Qualifier	B-2 Conc.	B-2 Data Qualifier	B-3 Conc.	B-3 Data Qualifier	B-4 Conc.	B-4 Data Qualifier	B-5 Conc.	B-5 Data Qualifier	B-6 Conc.	B-6 Data Qualifier	B-7 Conc.	B-7 Data Qualifier	Frequency of Detection	Average Conc.*	Estimated 2,3,7,8-Congener Homologue Multiplier**	Estimated 2,3,7,8-Congener Concentration	Toxicity Equivalency Factors (TEFs) for 2,3,7,8-CDDs & CDFs#	Estimated TEQ
Polychlorinated Dibenzodioxins																				
TCDD	0.067	U	0.014	U	13.0		0.028	U	1.1		19.0		0.028	U	3/7	4.74	0.045	0.215	N/A	N/A
2,3,7,8-TCDD	0.067	U	0.014	U	0.36	U	0.028	U	0.050	U	0.36	U	0.014	U	0/7	0.00	N/A	0.000	1	0.000
PeCDD	0.42	U	0.095	U	1.6	U	0.18	U	0.18	U	1.1		0.037	U	1/7	0.34	0.071	0.024	0.5	0.012
HxCDD	0.21	U	0.049	U	2.5		0.11	U	0.48		1.6		0.021	U	3/7	0.68	0.300	0.205	0.1	0.020
Polychlorinated Dibenzofurans																				
TCDF	0.28	U	0.07	U	2.5	U	0.074	U	0.10	U	0.84		0.051	U	1/7	0.34	0.026	0.009	0.1	0.001
PeCDF	0.16	U	0.28	U	0.63		0.050	U	0.082	U	1.4	U	0.025	U	1/7	0.26	0.071	0.019	0.5 & 0.05	0.010
HxCDF	0.19	U	0.038	U	0.97	U	0.066	U	0.16		0.6	U	0.021	U	1/7	0.16	0.250	0.039	0.1	0.004
																			Total TEQ	0.047
Organophosphate Pesticides																				
Phorate	16,000			U		U		U		U		U	300		2/7	NC	N/A	N/A	N/A	N/A
O,O,O-Triphosphorothioate	7,200			U		U		U		U		U		U	1/7	NC	N/A	N/A	N/A	N/A
All Others		U		U		U		U		U		U		U	0/7	0.00	N/A	N/A	N/A	N/A

* For each area, average concentrations for each chemical were calculated assuming nondetects were equal to DL/2 if that chemical were detected in the area.
* For each area, average concentrations for each chemical were calculated after averaging duplicate sample analyses.
** (U.S. EPA, 1994c, p. 3-8)
# (U.S. EPA, 1994a, p. 3)
N/A = Not Applicable
NC = Not Calculated

Furan/Dioxin/Organophosphate Pesticides
Final Results

ALL VALUES REPORTED IN PARTS PER BILLION
ASTERISK (*) DENOTES "NOT DETECTED"; VALUE REPORTED IS DETECTION LIMIT

UNIT 13 - RAIL CAR

Boring No.	B-1	B-2	B-2 dup	B-3	B-4	B-5	B-6	B-7
Depth (ft)	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5
Furans								
TCDF	0.33*	0.5	0.34	0.061*	0.54*	0.32	0.2*	0.049*
PeCDF	0.12*	0.21*	0.089*	0.021*	0.17*	0.14*	0.11*	0.062*
HxCDF	0.051*	0.14*	0.14*	0.035*	0.098*	0.061*	0.11*	0.039*
Dioxins								
TCDD	2.8	9.3	8.3	0.52	0.4*	2.3	3.8	0.52
2378TCDD	0.041*	0.052*	0.065*	0.028*	0.4*	0.045*	0.024*	0.021*
PeCDD	3.4	2.4	1.7	0.46	3.3	1.1	2.5	0.45*
HxCDD	1.7	2.3	1.4	0.25	1.9	0.8	1.5	0.28*
Organophosphate Pesticides								
All	ND	ND	ND	ND	ND	ND	ND	ND

UNIT 59 - IGNITABLE TRUCK STAGING AREA

Boring No.	B-1	B-2	B-3	B-4	B-5	B-5 dup	B-6	B-7	B-8	B-9
Depth (ft)	3-5	1-3	1-3	1-3	3-5	3-5	3-5	3-5	3-5	1-3
Furans										
TCDF	0.088*	0.12*	0.096*	0.072*	0.048*	0.046*	0.30*	0.087*	0.11*	0.87*
PeCDF	0.12*	0.056*	0.040*	0.068*	0.023*	0.026*	0.13*	0.047*	0.034*	0.24*
HxCDF	0.067*	0.064*	0.045*	0.052*	0.028*	0.033*	0.11*	0.042*	0.055*	0.53*
Dioxins										
TCDD	0.33*	0.50	0.57	1.4	3.2	3.8	1.0	5.9	3.6	2.3
2378TCDD	0.033*	0.076*	0.067*	0.016*	0.030*	0.035*	0.063*	0.029*	0.042*	0.42*
PeCDD	0.15*	0.45*	0.36*	0.79	1.7	1.7	0.97	3.2	2.0	0.65*
HxCDD	0.084*	0.13*	0.19*	0.36*	0.82	0.74	0.46	1.3	1.0	0.67*
Organophosphate Pesticides										
All	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

UNIT 60 - ROLLOFF STORAGE AREA

Boring No.	B-1	B-2	B-3	B-3 dup	B-4	B-5	B-6	B-6	B-7	B-8	B-9
Depth (ft)	3-5	3-5	3-5	3-5	5-7	3-5	1-3	3-5	1-3	1-3	1-3
Furans											
TCDF	2.6*	1.5*	0.11*	0.061*	5.9*	4.4*	0.51*	2.4*	0.12*	0.61*	15.0*
PeCDF	3.2*	1.6*	0.051*	0.044*	0.81*	0.46*	0.26*	1.8*	0.030*	0.30*	3.1*
HxCDF	1.6*	2.9*	0.044*	0.032*	0.66*	0.71*	0.34*	3.0*	0.074*	0.60*	3.2*
Dioxins											
TCDD	5.9*	1.3*	0.098*	0.1*	90.0*	1.7*	3.2	1.8*	0.20	3.0	3.1*
2378TCDD	0.98*	1.3*	0.035*	0.041*	5.3*	1.7*	0.31*	1.8*	0.048*	0.41*	3.1*
PeCDD	0.98*	4.0*	0.11*	0.054*	2.0*	1.1*	0.68*	5.9*	0.089*	0.73*	8.9*
HxCDD	2.2*	2.9*	0.091*	0.067	1.7*	1.2*	0.61*	4.2*	0.061	1.1*	4.1*
Organophosphate Pesticides											
O,O,O-Triphosphorothioate	39	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Rest	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

UNIT 61 - CONTAINER HANDING DOCK

Boring No.	B-1	B-1 dup	B-2	B-3	B-4	B-5	B-6	B-7
Depth (ft)	3-5	3-5	3-5	3-5	3-5	1-3	1-3	1-3
Furans								
TCDF	0.11*	0.064*	0.083*	0.09*	0.13*	0.24*	1.9*	0.051*
PeCDF	0.024*	0.024*	0.029*	0.042*	0.033*	0.056*	0.95*	0.025*
HxCDF	0.033*	0.050*	0.041*	0.052*	0.039*	0.036*	1.1*	0.021*
Dioxins								
TCDD	0.012*	0.019*	0.013*	0.028*	0.024*	1.8	2.8	0.028*
2378TCDD	0.012*	0.019*	0.013*	0.028*	0.024*	0.056*	1.0*	0.014*
PeCDD	0.060*	0.12*	0.088*	0.12*	0.10*	0.13	3.2*	0.037*
HxCDD	0.048*	0.054*	0.059*	0.04*	0.058*	0.25	1.5*	0.021*
Organophosphate Pesticides								
All	ND	pending	ND	ND	ND	ND	ND	

UNIT 62 - CONTAINER DOCK TRUCK PARKING PAD

Boring No.	B-1	B-2	B-3	B-4	B-5	B-6	B-7
Depth (ft)	3-5	3-5	3-5	3-5	1-3	3-5	1-3
Furans							
TCDF	0.28*	0.07*	2.5*	0.074*	0.10*	0.84	0.051*
PeCDF	0.16*	0.26*	0.83	0.050*	0.082*	1.4*	0.025*
HxCDF	0.19*	0.038*	0.97*	0.066*	0.16	0.6*	0.021*
Dioxins							
TCDD	0.087*	0.014*	13.0	0.028*	1.1	19.0	0.028*
2378TCDD	0.087*	0.014*	0.36*	0.028*	0.050*	0.36*	0.014*
PeCDD	0.42*	0.095*	1.6*	0.18*	0.16*	1.1	0.037*
HxCDD	0.21*	0.049*	2.5	0.11*	0.48	1.6	0.021*
Organophosphate Pesticides							
Phorate	16000	ND	ND	ND	ND	ND	300
O,O,O-Tri-phosphoro-thioate	7200	ND	ND	ND	ND	ND	ND
Rest	ND	ND	ND	ND	ND	ND	ND

B-16-TA-1

CC: Maywood } letter
USEPA } only

JKH
EM

CleanHarbors®

ENVIRONMENTAL SERVICES, INC.
1200 CROWN COLONY DRIVE, P.O. BOX 9137 • QUINCY, MA 02269-9137
(617) 849-1800

Via Federal Express

September 27, 1994

Mr. Eric Minder
Illinois Environmental Protection Agency
Division of Land Pollution Control -- #24
Permit Section
2200 Churchill Road
Post Office Box 19276
Springfield, IL 62794-9276

Re: Clean Harbors of Chicago, Inc.
Log No. B-16-M-2
Final Analytical Data

Dear Mr. Minder:

Enclosed please find one copy of the final analytical results (except dioxins, furans, etc.) for the preconstruction boring program undertaken by Clean Harbors of Chicago, Inc. at the CWM Chemical Services, Inc. hazardous waste facility in Chicago, IL. The results are in three sets, and include the proposed rolloff storage area (Unit No. 60), as well as various locations in the ignitable truck staging area (Unit 59), the container dock (Unit 61) and container dock truck parking area (Unit 62).

If you have any questions, please do not hesitate to contact me at (617) 849-1800, extension 4473.

Sincerely,

RECEIVED
SEP 28 1994
IEPA - DLPC
PERMIT SECTION

Paul A. Ahearn

Paul A. Ahearn
Manager, Regulatory Compliance

cc: Robert Watson, IEPA (Certified Mail P 263091658)
Anton Martig, USEPA Region V (Certified Mail P 263091659)
Stephen Pozner, V.P., Compliance and Health & Safety, CHESI

Enclosures

CleanHarbors®
ENVIRONMENTAL SERVICES, INC.
1200 CROWN COLONY DRIVE, P.O. BOX 9137 • QUINCY, MA 02269-9137
(617) 849-1800

WRITER'S DIRECT NUMBER
Extension 4182

LAW DEPARTMENT
(617) 849-1800
FAX (617) 786-9716

VIA OVERNIGHT DELIVERY

August 22, 1994

Dames & Moore, Inc.
Attn: David P. Trainor, Managing Principal
2701 International Lane, Suite 210
Madison, wisconsin 53704

Re: Performance of Soil Borings on
CWM Chicago Incinerator Site

Dear David:

This correspondence authorizes Dames & Moore to proceed with the performance of Clean Harbors' Pre-Construction Soil Boring Program on the CWM Chicago Incinerator Site. The Program was proposed to IEPA in Clean Harbors' letter dated August 12, 1994 and conditionally approved by IEPA in its letter dated August 16, 1994, copies of both of which are enclosed. Those letters and this correspondence constitute the scope of work. The work by Dames & Moore will be subject to the terms and conditions of its contract with Clean Harbors dated June 15, 1992, as amended on May 16, 1994. In the near future I will provide you with a Purchase Order Number for invoicing purposes.

As Paul Whiting indicated to you during our conversation earlier today, the soil borings need to be performed in the following sequence commencing on August 29, 1994:

- Area 13 (Rail Car Unloading);
- Areas 61/62 (Container Handling Dock/Truck Pad);
- Area 59 (Truck Staging) and Area 60 (Roll-Off Pad for Fuels Blending) -- you choose sequence; and
- Area 14 (Truck Scale).

As further discussed, construction in Areas 13 and 14 will necessitate the abandonment of Well G-349. Dames & Moore should have this well abandoned in accordance with applicable regulations during this soil boring project.

Analyses of the samples will be performed by Clean Harbors' laboratory in Braintree, Massachusetts, and our lab will contract out any analyses it cannot perform itself. In brief, one sample from each of the 40 borings must be analyzed for all of the IEPA Appendix I (USEPA Appendix IX) parameters. Your contact at the lab is Jay Cudmore who can be reached at (617) 849-1800, extension 1469. Please call Jay regarding logistical arrangements (sample jars, shipping, etc.). You should also request Jay to provide you with any documentation (procedures, protocols, etc.) which will be necessary for inclusion in the report pursuant to EPA's August 16th letter. Within the next day or so I will provide you with a Project Number for use in the identification of the samples.

After you have reviewed this letter and the enclosures, please contact me if you have any questions. I will be out of the office next week, and if any problems arise on-site, you should contact either Paul Ahearn (extension 4473) or Paul Whiting (extension 4187) at Clean Harbors.

Very truly yours,

Jules B. Selden
Attorney

Enclosures

cc: Paul Ahearn
Paul Whiting
Steve Pozner
Jeanne Engel
Jay Cudmore
Jonathan Black

@517

CleanHarbors
OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, IL 60617
(312) 646-6202

Oct 2, 1991

Illinois EPA
Division of Land Polution Control
Ms. Joy Purdy
P.O. Box 19276
Springfield , IL 62794-9276

Dear Ms. Purdy ;

Please find enclosed the items you requested :

a. Depth of interval of samples taken .
b. A copy of the section in the professional engineers report pertaining to sampling methods .
c. Sketch of sample area.
d. Solid waste managemant report from CIRCUIT SYSTEMS .

Thank you for your patience as we compiled this information and I look forward to working with you as we move forward with this project .

Sincerely ;

Paul Misiaszek
General Manager
Chicago Service Center

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Sample depth :

Sample were taken at two depths top sample at 6 to 12 inches and bottom samples at 18 to 24 inches .

Point where samples were taken will correlate with the grid by number and letter of the subset. (see grid)

1a. top	1b. bottom
2a. bottom	2b. top and bottom
3a. top	3b. bottom
4a. bottom	4b. top
5a. top	5b. bottom
6a. bottom	6b. top
7a. top	7b. bottom

7 . top and bottom

1c. top	1d. bottom
2c. bottom	2d. top
3c. top	3d. top and bottom
5c1. top	4d. top
5c2. top	5d. bottom
6c. bottom	6d. top
7c. top	7d. top